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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,736	10/22/2003	Robin L Wang	19441-0011	2735
29052	7590	01/05/2006	EXAMINER	
SUTHERLAND ASBILL & BRENNAN LLP 999 PEACHTREE STREET, N.E. ATLANTA, GA 30309			WARTALOWICZ, PAUL A	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 01/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/605,736	<b>Applicant(s)</b> WANG ET AL.	
	<b>Examiner</b> Paul A. Wartalowicz	<b>Art Unit</b> 1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 October 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 16-27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 1-27 are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/10/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Election/Restrictions***

Restriction to one of the following inventions is required under 35 U.S.C. 121:

- I. Claims 1-15, drawn to a method, classified in class 423, subclass 650.
- II. Claims 16-27, drawn to an apparatus, classified in class 422, subclass 149.

Inventions I and II are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the process as claimed can be practiced by another materially different apparatus such as one without a reactor shell.

During a telephone conversation with Peter Pappas on December 16, 2005 a provisional election was made with traverse to prosecute the invention of the process, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 8 recites the limitation "said noble metal" in lines 1 and 2. There is insufficient antecedent basis for this limitation in the claim.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422

F.2d 438, 164 USPQ 619 (CCPA 1970); and In re Thorington, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claim 1 is provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claim 7 of copending Application No. 10/605737 in view of Isogaya et al. (U.S. 4331451). Application No. 10/605737 teaches a catalytic structure disposed in the catalytic reaction zone comprising an oxidation catalyst supported on an open-channel support, feeding a feed gas mixture comprising an oxygen containing gas and a heavy hydrocarbon fuel and passing the said feed gas mixture through said catalytic structure, maintaining the catalytic reaction zone at a temperature sufficient to convert the feed gas mixture to an exit gas stream containing hydrogen and carbon monoxide as main reaction products (claim 7). Application No. 10/605737 fails to teach a steam-reforming catalyst and an oxidation catalyst wherein the steam-reforming catalyst is different from the oxidation catalyst.

Isogaya et al., however teach a process for conversion of hydrocarbon fuel to produce an exit gas stream containing hydrogen and carbon monoxide as main reaction products (col. 1, lines 6-10) wherein a catalytic structure comprising an oxidation catalyst and a stream reforming catalyst (alkali aluminate or tungsten containing nickel catalyst in the first catalyst bed and aluminum oxide or nickel oxide in the second catalyst bed, col. 2, lines 60-67) with steam reforming is effected in the first bed and

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partial oxidation is effected in the second bed (col. 6, lines 50-54) for the purpose of producing an exit stream containing hydrogen and carbon monoxide as main reaction products (col. 6, lines 55-63).

Therefore it would have been obvious to one of ordinary skill in the art to provide a catalytic structure comprising an oxidation catalyst and a steam reforming catalyst (alkali aluminate or tungsten containing nickel catalyst in the first catalyst bed and aluminum oxide or nickel oxide in the second catalyst bed, col. 2, lines 60-67) with steam reforming is effected in the first bed and partial oxidation is effected in the second bed (col. 6, lines 50-54) in Application No. 10/605737 in order to produce an exit stream containing hydrogen and carbon monoxide as main reaction products (col. 6, lines 55-63) in a chemically similar reaction as taught by Isogaya et al.

This is a provisional obviousness-type double patenting rejection.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 8, 9, 13, 14, and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Isogaya et al. (U.S. 4331451).

Isogaya et al. teach a process for conversion of hydrocarbon fuel to produce an exit gas stream containing hydrogen and carbon monoxide as main reaction products



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(col. 1, lines 6-10) providing a feed gas mixture comprising an oxygen-containing gas and kerosene (col. 2, lines 55-58), providing a catalytic structure comprising an oxidation catalyst and a steam reforming catalyst (alkali aluminate or tungsten containing nickel catalyst in the first catalyst bed and aluminum oxide or nickel oxide in the second catalyst bed, col. 2, lines 60-67) with steam reforming is effected in the first bed and partial oxidation is effected in the second bed (col. 6, lines 50-54) supported on a fluidized bed (col. 6, lines 47-49) wherein the catalyst is maintained at 800-1300 ° C (col. 4, lines 45-50) wherein the residence time in the reaction zone is 0.1-10 seconds (col. 7, lines 50-52) and the process deposits less than 1% of total carbon in said hydrocarbon fuel as elemental carbon and carbon-rich compounds (Table 1, Run 5) wherein the product gas can be supplied to a fuel cell (col. 7, lines 35-38).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 4, 5, 7, and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isogaya et al. (U.S. 4331451) in view of Rudy (U.S. 5010051).

Isogaya et al. teach a process for conversion of hydrocarbon fuel as described in claim 1. Isogaya et al. fail to teach wherein said oxidation catalyst is the noble metal rhodium and wherein said steam reforming catalyst comprises rhodium and wherein open-channel support comprises a ceramic monolith and wherein said open-channel support comprises a porous alumina monolith.

Rudy, however, teaches a process for the oxidation of hydrocarbons (col. 1, lines 14-16) wherein rhodium is a catalyst dispersed on activated alumina (col. 3, lines 44-48) for the purpose of oxidizing hydrocarbons (col. 3, lines 8-11).

Therefore, it would have been obvious to one of ordinary skill in the art to provide rhodium on activated alumina (col. 3, lines 44-48) in Isogaya et al. in order to oxidize hydrocarbons (col. 3, lines 8-11) in a chemically similar process for oxidation of hydrocarbons (col. 1, lines 14-16) as taught by Rudy.

Rudy also teaches a process for the oxidation of hydrocarbons (col. 1, lines 14-16) wherein porous activated alumina support and a ceramic support (col. 6, lines 1-5) for the purpose of attaining at least 50% conversion for hydrocarbons (col. 6, lines 9-11).



Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide a porous activated alumina support and a ceramic support (col. 6, lines 1-5) in Isogaya et al. in order to attain at least 50% conversion for hydrocarbons (col. 6, lines 9-11) in a chemically similar process for oxidation of hydrocarbons (col. 1, lines 14-16) as taught by Rudy.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Isogaya et al. (U.S. 4331451) in view of Voeste et al. (U.S. 4854943).

Isogaya et al. teach a process for hydrocarbon conversion as described in claim 1. Isogaya et al. fail to teach wherein said feed gas mixture being essentially free of water.

Voeste et al., however, teach a process for combusting hydrocarbons (col. 1, lines 43-45) wherein no water is added for the purpose of high production of CO gas (col. 4, lines 6-9).

Therefore, it would have been obvious to one of ordinary skill in the art to provide no water added to the feedstock (col. 4, lines 6-9) in Isogaya et al. in order to obtain a high yield of CO gas (col. 4, lines 6-9) as taught by Voeste et al. in a similar process for combusting hydrocarbons (col. 1, lines 43-45).

**Conclusion**

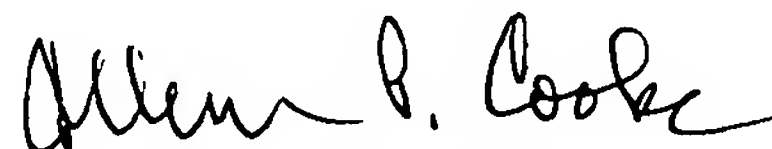
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Wartalowicz  
December 20, 2005



COLLEEN P. COOKE  
PRIMARY EXAMINER